



Photo: Rafsan Halim.

ICT and Health

2 e-Health: promises and challenges for social inclusion

The main article of this newsletter explains the important role that information and communication technologies (ICT) play in helping mitigate existing health care inequities. The article provides an overview of these inequalities in Latin America and the Caribbean, and suggests public policies for implementing e-health in the region's countries.

9 RUTE (Brazilian Telemedicine University Network): telemedicine and training

Brazil has an extensive university-based telemedicine network known as RUTE, which enhances the coverage and quality of health services. The country also has a National Teaching and Research Network that trains professionals and other human resources in the field of health.

6 Telemedicine as a health solution in rural areas of Latin America and the Caribbean

Access to health centres and specialists is not always easy for populations in rural or isolated areas. Telemedicine has emerged as a solution to this problem, using technology to bring patients and health personnel together. This article reviews the interesting initiatives underway in some of the countries of the region.

10 Electronic Medical Records (EMR) at the Hospital Italiano in Buenos Aires: technology serving patients

The use of EMR has multiple benefits for patients. By having their medical records online, patients enjoy quicker access to diagnoses, and can avoid repeating tests. Hospital Italiano has had excellent results from this technology.

11 Innovative health information system is implemented in the Metropolitan West Health Service

In Santiago de Chile, on the second largest health service of the country, it was implemented a pioneering user-centred health information system that not only facilitates care, but also offers other benefits, as explained in this article, including improving resource management.



ICT and Health: Promises and challenges for social inclusion

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There are major health inequities in Latin America and the Caribbean. A number of factors limit access to timely, high-quality medical care. These include lack of human resources, infrastructure, equipment and medications; physical distance and cultural gaps between public health services and the population requiring them; and low family incomes. Income level, location and ethnic origin can lead to the vulnerability and exclusion of millions of the region's households. In addition, the demand structure is changing with the rapid ageing of the population and with the growth of urban areas, particularly medium-sized cities.

This scenario presents the State with major challenges in formulating strategies and policies. Decisions on incorporating information and communication technologies (ICT) must be a part of this process. The potential of these technologies to increase access and improve the sector's efficiency can play a vital role in resolutely confronting the complexities and resistances that other sectors have already begun to address.

Current context for incorporating ICT

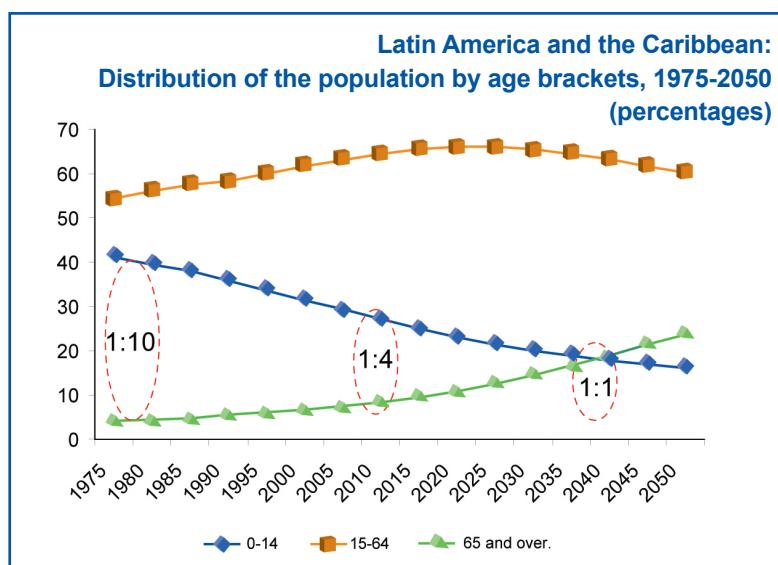
Maternal and child health challenges

Infant mortality is one of the indicators most indicative of persisting inequality. Despite a notable 50% reduction since 1990, infant mortality in the region is still three times higher than in Europe (20.6 deaths per thousand live births, versus 6.8 per thousand). Moreover, within a given country the rate can be as much as four times higher in low-income households than in high-income households. There are similar, though less acute, discrepancies based on ethnic origin and household location.

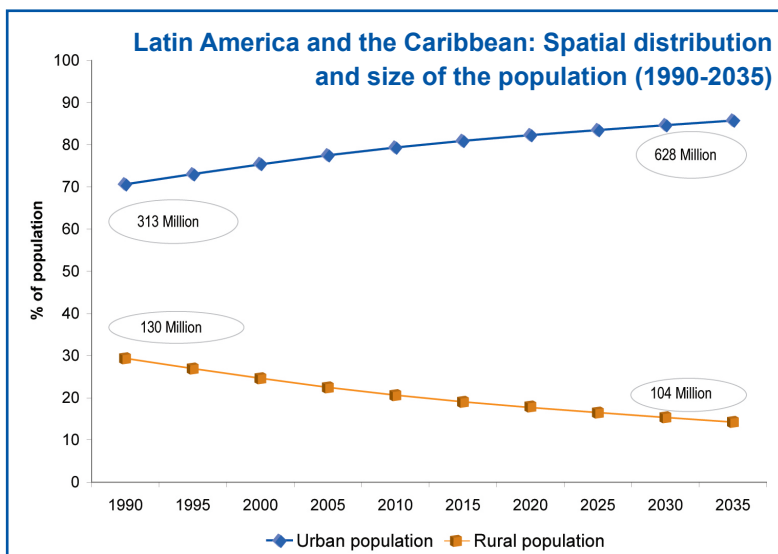
Maternal mortality rates have not improved as significantly as those for infant mortality, with national rates (around 2007) being between 18 and 127 deaths per 100,000 live births. This is far above figures in developed countries, where maternal mortality rates are below 10 deaths per 100,000 live births.

Sociodemographic trends that will change the demand structure

The age distribution of the population will change sharply in the coming years. Around 2040, there will be equal numbers of children and older adults. A number of countries will see their under-15 population diminish by around one third, while their over-64 population will triple. For example, the older adult population is expected to increase by 27 million in Brazil and 17 million in Mexico.



Source: Author, on the basis of information provided by the Latin American and Caribbean Demographic Centre (CELADE)-Population Division of ECLAC.



Source: World Urbanization Prospects.

In addition to population growth, major changes will be seen in the spatial distribution of the population. There were fewer than three urban inhabitants per rural inhabitant in 1990; today the ratio is four to one, and by around 2030 this will reach six to one.

At the same time, medium-sized cities will experience significant growth, especially in those countries where urbanization began earliest. On the other hand, in countries where urbanization had a later onset, principal and capital cities will continue to grow rapidly. This will affect both the current health care opportunities and the level of demand in cities with more limited supplies of specialized care.

Benefits and challenges

The potential health benefits of ICT

Eight areas in which ICT can contribute to health care have been identified: access, effectiveness, efficiency, quality, safety, knowledge generation, economic impact and integration. Each of these applies to the specific areas in which the technology is used: prevention, diagnosis, treatment, monitoring, health education, management of services, and health-sector e-commerce. The benefits and positive externalities of the technologies affect not only patients and the general population, but also health professionals and, due to their effect on economic growth, the society at large.

Access, effectiveness, efficiency and quality interact positively in telemedicine applications. For example, teleconsultation and teleradiology allow for a reallocation of medical resources that increases access to more timely and higher-quality services, with improved efficiency in using the resources directed at both health services and the patients themselves.

Such applications also have the potential to reduce geographical disparities and to facilitate access to resources, diagnosis, and the knowledge of scarce specialists, through linkages with health centres at different levels of the system. This capacity bears not only on the urban-rural dichotomy, but also on the disparities between cities and smaller population centers. The concentration of resources in the region's capital cities or metropolises is a well known phenomenon. With the sustained ageing of the population, the uses of telemonitoring will become increasingly important in tracking the chronically ill. At the

same time, technology use will reduce gaps in the ability to access ongoing training for health teams in different geographical areas, helping to establish local teams and improve the quality of care.

In addition, since extensive contacts, examinations and referrals constitute obstacles for patients who do not speak a country's official language, e-health has the capacity to create citizen-centred systems that respect different traditions and help reduce cultural barriers in health services.

Yet another benefit concerns the integrated management of administrative, clinical and health information, an area with significant potential for improving the efficiency of the health system. Increased capacity for data storage, aggregation and analysis aids in decision-making aimed at optimizing procedures, as well as in effectively assigning priorities for public health spending.

The urgent need for strategies and policies

In a context of vast diversity, both between and within countries, the incorporation of ICT in the field of health lags behind ICT use in other sectors such as education and government. However, there is a virtual explosion of public and private activity both in the form of new initiatives and in the expansion of existing ones, although there is no systematic record of these developments. Furthermore, despite the range of projects, there is an absence of specific policies, and therefore the initiatives are generally not coordinated with national strategies. There has been little progress in defining standards, leading, in turn, to problems of interoperability. Another result of the failure to coordinate policies is that initiatives are not aligned with investment decisions on public health spending. Approximately half of the region's countries have been in the policy-design or digital-agenda-design stage for years, and very few show significant progress in this area.

Achieving health objectives is highly dependent on reducing health inequities, and ICT are a powerful tool for accomplishing this. Effective results, however, require consistent and sustained progress in developing infrastructure and in implementing validated and interoperable applications. This is true for health education as well as for disease prevention, for care as well as for the management of services. Consistency and sustainability in turn require decisive leadership from major health officials, and collaboration from the various stakeholders, who must work towards a common and sustained public policy agenda.

Opinion column: eLAC2010 Working Group on e-Health

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The Working Group on e-Health was formed as a response to the eLAC2010 Regional Plan. The group includes professionals associated with academic institutions, professional associations and other civil society groups involved in e-health initiatives in Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Panama, Uruguay, the Bolivarian Republic of Venezuela and Spain.

The first working meeting, a “Workshop on the monitoring and analysis of regional e-health and telemedicine policies and goals”, was held in Santiago, Chile on 30 November and 1 December 2009.

The workshop designed a “country fact sheet” covering general information on national health systems. This is to include data on access to ICT in public health services, and information on the types of applications being used, such as electronic medical records, telemedicine services, management support systems, web-based information services, and networks of professionals and patients. The form, which also has a field for data on national e-health policy and strategy, has been sent to the countries, and ECLAC is currently analysing information gathered from throughout the region.

Among the countries that have sought to introduce national e-health and telemedicine programmes are Brazil, Colombia, Mexico and Chile. However, the lack of systematic records of programme impact makes it difficult to monitor and evaluate the programmes. This lack of records also hinders efforts to move from proposals to actual public policy. In particular, the lack of records makes it difficult to obtain information on the scope and connectivity of medical care units. Such information is not included as an indicator in sectoral statistics.

One challenge –and area of opportunity– in the area of health within the region is that of obtaining and monitoring epidemiological information in a timely way. The experience of the countries, as reflected in the information collected so far, shows that although most of the region’s countries have implemented e-health projects, these are of limited scope, and are not aligned or integrated with national ICT health policy or strategy.

Peru seeks to win the war on tuberculosis with the help of digital imaging

According to World Health Organisation (WHO) statistics, someone in the world is infected with the tuberculosis bacillus every second, and one third of the world’s population is believed to be currently infected. In 10% of those infected, the disease is active.

In Peru, tuberculosis is considered a national health priority. According to the country’s Ministry of Health, over 55,000 cases were reported in 1992. This figure was reduced by 32.7% by 2007, and the goal for 2011 is a further reduction of 50%.

To aid in reaching this goal, an initiative has been undertaken by the CTIC Foundation, based in Spain, and by Peru’s Alexander von Humboldt Institute of Tropical Medicine (known by its acronym IMTAvH). The project, dubbed the “Expert System”, is designed to facilitate early detection of the disease. The programme can also save resources by providing services at community hospitals and health centres, making it possible to make diagnoses without transporting the patients.

The system is based on 1,600 sputum smears from TB patients, which are used to develop an algorithm employing 1,600 catalogued microscopic images of bacilli. Each image will have a legend providing as much information as possible.

Once the algorithm has been developed and the images have been input, software will be transferred to IMTAvH to validate the system in a real environment with patients from the district of San Juan de Lurigancho —Peru’s most populous district, with a population of one million. In this phase, people will be examined and diagnosed both by the Institute’s personnel and by the Expert System, in order to assess the system’s accuracy in a real-world setting.

The technology is simple to handle, with medical centre personnel requiring no more than a computer and a printer to use it.

The pilot phase of the Expert System will begin in October and November of 2010 in the district of San Juan de Lurigancho, and will require an investment of US\$ 100,000, which is expected to be raised from a variety of funding sources.

Medicarro: a telemedicine solution made in Venezuela

Implementation of ICT in the field of medicine is continually expanding in Venezuela. Created through a partnership between the National Centre for Technological Innovation (Centro Nacional de Innovación Tecnológica, or CENIT) and Simón Bolívar University, Medicarro is, in the words of Dr. Ricardo Silva, Head of the Biophysics Laboratory at Simón Bolívar University, a “medical communications centre”. This invention takes the form of a personal computer connected, through the Internet, with a national database of electronic medical records and a network of experts. “It has the ability to obtain and manipulate medical data, particularly dermatological, otoscopic and ophthalmological images. It can obtain cardiological data, and can be linked to other medical equipment as needed”, Silva explains. To save manufacturing costs, a strategic partnership was created involving a company specialising in surgical equipment and a computing firm. The project has been technically validated by governmental agencies and is awaiting authorization to begin industrial production.

First Meeting on ICT and Health, 7 June, Brazil

São Paulo was the site of this meeting, which was organised by the Ibero-American Association of Research Centres and Telecommunication Companies (AHCiet), the Ibero-American Secretariat (SEGIB) and Brazil's Ministry of Health, bringing together experts from different Ibero-American countries and multilateral organisations. The event concentrated on disseminating success stories involving ICT applications in the health field. A further goal of the meeting was to support the transfer of best practices through the “ICT and Social Inclusion” project, which was developed by AHCiet and approved by the Ibero-American Summit of Heads of State and Government. ECLAC was one of the institutions that collaborated, through its @LIS2 Programme, which is funded by the European Union.

Opinion column: Interoperability in e-health

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The countries of Latin America and the Caribbean (LAC) have recently begun to develop electronic health (e-health) strategies in the public and private spheres. A great deal remains to be accomplished in order to bring the widespread benefits of using information and communication technologies (ICT) to the region's health systems.

The term e-health refers to the use of ICT to support and empower medical care services and health activities; whereas the term interoperability indicates the ability of systems and organisations to communicate, exchange data, and share and integrate information, knowledge and processes easily, securely and fluidly, usually based on common, compatible standards and practices. When systems and organizations approve and agree to accept the exchange of information and services, interoperability is present. This entails identifying dimensions beyond the technical, including operational factors and semantics.

Technical interoperability refers specifically to the capacity of two or more systems to exchange and utilize information. This is based principally on standards for security, syntax and technical networks. Standardizing syntax makes it possible to agree on how to structure the language and messages involved in exchanges. Semantic standards are agreements on the meaning of terms used in exchanging information. Operational interoperability encompasses the organizational sphere, and involves common practices and protocols that link transparently with order, service and other processes.

A study by the Organization for Economic Cooperation and Development (OECD) on the performance of health systems points to the challenges of implementing timely exchange of relevant and comprehensible clinical information between public hospitals and primary care services. The OECD document points to major difficulties in the area of linking ambulatory services with services for acute and chronic care. It also warns of potential sources of error in communications between primary, secondary and tertiary care levels, especially when the distribution, use and prescription of medications is involved.

The main challenges facing governments, with regard to the use of ICT in health, are those of creating incentives to foster interoperability, working on legal, jurisdictional, collaborative and organizational constraints, and addressing the informational, management, cost, technology and performance problems that those constraints imply.

Interoperability initiatives can help in integrating fragmented health systems. These should focus, however, on fostering and improving interaction between systems and subsystems, and on strengthening service network at particularly important nodes –points at which ICT can play a significant role in increasing access, security and quality in the region's medical care.

Telemedicine: a health solution in rural areas of Latin America and the Caribbean

For inhabitants of rural areas, access to medical specialists is problematic, since it requires travel to urban centres where these doctors are located. Such travel is often costly and sometimes impossible for rural residents. However, implementation of telemedicine initiatives has been underway for some time, opening up significant opportunities for specialized care and diagnosis for rural populations.



Peru: 500 kilometres of interconnection

The world's longest interconnected rural medicine network is being developed in Peru's Napo River basin. The network will bring benefits to approximately 20,000 people in the province of Maynas, including the Torres Causana and Napo districts, as well as parts of the Mazán district, according to Peru's Regional Health Office. The network stretches approximately 500 kilometres, with nodes located 20 to 60 kilometres apart, and with 18 connection points by which the various rural health centres can link up with referral centres via the network.

This initiative was conceived in 2007 as the Andean Region Malaria Control Project for Border Areas (PAMAFRO). It began as a voice and data system for communication between isolated populations and urban hospitals, and was initially a more limited interconnected network. It was subsequently expanded, and became the telemedicine network, as a result of support from the Hispano-American Health Link (EHAS), Rey Juan Carlos University (Spain), the Madrid Polytechnic University (Spain) and the Rural Telecommunications Group at the Pontifical Catholic University of Peru.

Through this network, patients have access to remote real-time evaluation by specialists, via either video or audio, using dopplers and webcams. In this way, a variety of medical specialists can provide high-quality medical attention to large areas in which health centres are highly dispersed, and in which human and technological resources are in scarce supply.



Photo: Stock.XCHNG.



The "SOS Telemedicine for Venezuela" programme

Venezuela's SOS telemedicine programme at the School of Medicine of the Central University of Venezuela (UCV), funded through the Organic Law of Science, Technology and Innovation, is designed to provide expert support to health professionals and students working in primary care facilities. The aim is to reduce barriers to accessing medical services and allow patients who do not have ready access to specialists to obtain consultations without having to travel to do so.

The SOS programme offers teleconsults and telediagnosis free of charge, provided by qualified professors in various medical specialties. The service is offered to help health care personnel improve the quality of diagnosis and care. It also provides distance education, opportunities to work on cooperative scientific research projects conducted by UCV, access to virtual health libraries contracted for by the university, and health services for communities.



Mexico, a pioneer in the field

In 1986, with support from the Secretariats of Health, Communications and Transportation and from the National Autonomous University of Mexico (UNAM), the Federico Gómez Children's Hospital of Mexico established continuing medical education programmes via satellite for the country's health workers. This was the first telemedicine initiative in Mexico.

In 1995, the Social Security and Social Service Institute for State Workers (ISSSTE) created the Telemedicine System. According to data from the Telemedicine Programme, a total of 76,862 teleconsults took place between 2008 and August of 2009. This eliminated the need for more than 27,105 patient referrals to the next highest care level, as well as, in 117,108 cases, the need for other individuals such as family members, nurses and doctors to travel unnecessarily. As of 2009, 18 telemedicine teams were in operation via satellite, and 177 were functioning through the Internet.

In 2002, the University of Anáhuac initiated telemedicine activities in order to provide remote consultations with specialists for the most marginalized populations. The programme began in the states of Guerrero and Oaxaca. Over time, videoconferences with patients themselves were added, as well as courses for general practitioners and continuing medical training. In this way, the programme has succeeded in providing highly specialized consultations to patients far from urban centres. Levels of productivity and overall yield have been high, while wait times have been reduced.

Meanwhile, the Centre for Telehealth at the University of New Mexico, in the United States, in collaboration with Ecuador's Universidad Equinoccial, has improved medical service for the inhabitants of remote areas of the country via "telemedicine ships", which also assist health professionals working in remote areas and in areas that are socially vulnerable.



Colombia: Telemedicine by specialists in radiology and rehabilitation

In Colombia, the Communications Pension Fund (CAPRECOM) has contracted with two referral centres for telemedicine: the

University of Caldas and the National University of Colombia. These have a basic, low-complexity telemedicine package providing specialized outside consultations. They also provide for radiology consults and diagnostic imaging (teleradiology), in addition to electrocardiogram consultations (tele-EKG). An intermediate, or moderate-complexity, telemedicine package is also available, providing remote assistance for intermediate care and ongoing intensive care. This includes direct medical assistance and general nursing care, specialized outside consultations, as well as teleradiology and tele-EKG services.

Since 2003, the National University of Colombia has also been part of the @LIS (Alliance for the Information Society) project for evidence-based (tele)medicine for remote and rural underserved regions. This project works with the Fraunhofer Institute for Biomedical Engineering (IBMT), among other institutions, to provide telehealth platforms. With support from CAPRECOM, the project's centre operates telemedicine networks in different municipalities, as part of the National Telemedicine Plan of the Ministry of Social Protection.

The Colombian Social Security System and the company Vision Technology Group (VTG) created a teleradiology programme to address the need for basic coverage of radiological image interpretation in the 10 ambulatory care centres in the Cundinamarca Region equipped with the necessary infrastructure, as well as at centres in peripheral areas such as Muña, Madrid and Zipaquirá.

The Telemedicine Centre of Colombia also provides resources, including a telerehabilitation programme that offers assistance to rural areas, making extensive use of images generated and projected in videoconferences from rehabilitation centres. This makes it possible to establish links with specialized medical care services and avoid transporting patients, while at the same time reducing costs and time loss, among other benefits.



Costa Rica: Clinical records and hand geometry

Costa Rica's Ngöbe region has intermittent settlements of itinerant indigenous populations with low literacy rates. The government provides these communities medical coverage through the San Vita Hospital. However, serving the area's inhabitants is complicated by the fact that they are reluctant to identify themselves, since their customs include a practice of changing their names over the years. CETIC joined with the University of Costa Rica to initiate a telemedicine project

to solve this problem. If patients could be identified, and corresponding medical records created, their care could be improved. Biometric solutions were explored. Various means of identification were ruled out –fingerprints (because of the wear and tear on these indigenous people's fingers due to their manual work), facial recognition (because the men of the tribe did not want their wives and children to be photographed) and iris recognition (because the people felt that the equipment involved in this method was invasive). Hand geometry was eventually settled upon as the identification method. The project is now awaiting funding from the European Union's transnational programme "Convocatoria MAC", which funds cooperation-based projects.



Panama

Telemedicine in Panama dates from 1998, when the Medical School of the University of Panama created the Medical Documentation and Information Centre (CDMI).

Remote stations were created in Chiriquí, Santiago, Chitré, Aguadulce, Penonomé and El Valle with support from the Ministry of Health and the Fundación para el Apoyo al Diagnóstico (FADDoM). Using a patient information form, the remote stations request assistance from CDIM, thus making it possible, by means of a computerized network, to obtain evaluations and diagnoses.

An additional resource is the National Telemedicine and Telehealth Programme, which consists of a number of activities conducted by doctors from the Ministry of Health and the Social Security Fund and engineers from the Technological University of Panama. This programme includes three components: rural services, prison services and teleradiology. It provides remote assistance and support to health professionals via radios and cell phones. This same method is used to provide care to indigenous communities. The project serves some 20,000 individuals in the communities of Jaqué, Boca de Cupe, Sambú, Garachiné and Tucutí, whose residents have access to evaluation by medical specialists located at hospitals in San José de La Palma and Santa Fe.



Argentina: a National University undertaking

Argentina has a project developed by the National University of the Northeast for rural hospitals in the Chaco region. The project aims to create quality circles by drawing on professional staff at various rural hospitals. These people contribute their services on a volunteer basis, interacting with their counterparts to address issues that arise in patient care.

Consultation with specialists at the first-referral hospitals takes place through electronic messaging. Digital images, including electrocardiograms, X-rays and even photographs of skin lesions, can be transmitted in this way.

Another university, the National University of Córdoba, also has a telemedicine programme. Here, the purpose is to provide excellence in health care for the overall population, independent of place of residence. Because of the mountainous terrain, a considerable portion of Córdoba's inhabitants remain isolated from larger hospital complexes. Telemedicine thus provides an excellent way of avoiding unnecessary and costly travel. The system is simple: doctors in remote locations connect to the programme's website, where they fill out a form describing the patient's symptoms. The information is received in real time by specialists in Córdoba, who then develop a diagnosis.

In June of this year, the National University of Entre Ríos signed an agreement with the Ministry of Health of the Province of Entre Ríos, under which the University's Engineering School is to develop a low-cost telemedicine project with the assistance of groups at the school's Telemedicine Centre (CETIFAC). The project's objective is to increase the effectiveness of medical care and reduce costs. It will draw on the participation of the province's 65 hospitals, in addition to all of its health centres.

Garrahan Hospital began remote medical care in June and plans to extend service to all of the country's hospitals over the next five years. The project was launched with a remote consultation from a hospital in Neuquén. Garrahan Hospital already provided diagnostic support to over 70 hospitals in Argentina via e-mail, and its system for remote communications has been in place for over 12 years. During this time, 80 offices have been opened to work with its Referral and Counterreferral Programme. The intention, given the telemedicine capabilities now in place, is to form a national public care network.

RUTE: Telemedicine and training

In Brazil, telemedicine is synonymous with the University Telemedicine Network, or RUTE. This network is based on the implementation of communications infrastructure in university and teaching hospitals, which began in January of 2006 with 19 university hospitals. At present, 158 institutions are benefiting from RUTE, and nearly 400 health institutions participate in virtual events over the network.

RUTE offers multiple benefits for the society, of which access to the communication infrastructure of university hospitals is but one. It provides 1GB-per-second connection with Metropolitan Community Teaching and Research Networks –known collectively as REDECOMEP), as well as a videoconferencing room for teleconsultations and telediagnosis. It also ensures the quality of the service, while fostering integration, stimulating collaborative research, providing inter-institutional training courses and instruction in medical care, drawing on the participation of major stakeholders such as government, the academic sector and businesses, putting forth indicators to evaluate services, and providing structure and support to interest groups focused on specialized health care.

The University Telemedicine Network receives support from Brazil's Ministry of Science and Technology through the National Agency for Innovation. This support is executed through the National Teaching and Research Network (RNP) and serves all public hospitals run by universities, as well as certified teaching hospitals (of which there are approximately 158). According to evaluations that have been conducted, telemedicine saves up to 70% of the cost of caring for and transporting patients in Brazil – the latter being very common in the large areas of the country that lack access to specialists.

Training for the network's personnel is essential to its functioning. According to Luiz Ari Messina, Coordinator of the Telemedicine Network of the University of Brazil, "Teams in telemedicine and telehealth hubs must be multidisciplinary. They include professionals in health, computing, engineering, natural and social sciences, technical support, design, administration, economics, etc. The telehealth hubs employ teams ranging from 4 to 80 people in services and projects." Since the 1990s, the RNP has been training technical staff at universities and research institutions and at the locations where the network's Internet operations are based, providing qualified staff for the administration and operation of national digital networks.

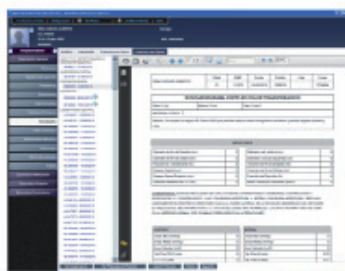
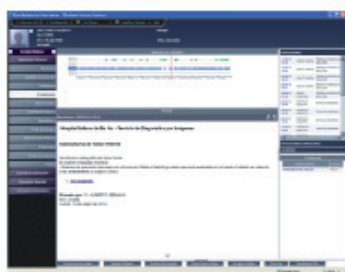
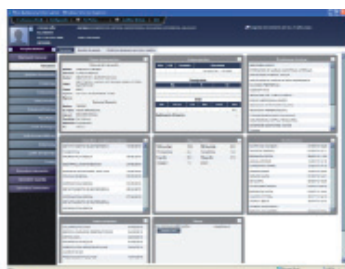
The year 2005 marked the beginning of the country's launch of units of the Escuela Superior de Redes –operated by the National Education and Research Network (RNP)– which provides practical courses for a growing number of information and communications technologies professionals. The RNP offers free Internet connections for federal higher-learning institutions associated with the Ministry of Education (MEC), federal research entities connected with the Ministry of Science and Technology (MCT), agencies of both

of these ministries, and other public and private teaching and research institutions. In addition to establishing links within Brazil's territory, the network provides connections to the United States. It is estimated that more than one million users in Brazil's academic community benefit from this infrastructure, thus fostering the country's progress in science and in higher education. Since 2000, the National Teaching and Research Network has promoted the use of advanced applications on computer networks. VoIP telephony, network-transmitted digital TV, distance education and IP videoconferencing are some of the new service applications being implemented for users.



Electronic Medical Records at the Hospital Italiano, in Buenos Aires: Technology serving patients

It has been 12 years since the Hospital Italiano, in Buenos Aires, began the ambitious project of implementing Electronic Medical Records (EMR) in its health network –a network that includes 2 hospitals, 25 ambulatory care centres and 150 doctors' offices spread throughout the Autonomous City of Buenos Aires and Greater Buenos Aires. The EMR idea emerged from the quest for efficiency and quality in medical care, in tandem with a growing awareness of the need for continuity in patient care.



Dr. Fernán González, Director of Medical Informatics at the hospital, explains that “two criteria must be met in order to ensure the continuity of care: a group of interacting individuals, and the preservation of information, since it is difficult to provide continuous care if the information is fragmented. This was a major element in the birth of the informatics project, which was designed to give the community better medical outcomes.” Thus, about eight years ago, EMR began to be used on a mass scale at the hospital. Initially they were implemented for ambulatory care; subsequently they began to be used in studies on admissions, and in emergency rooms, walk-in clinics and (currently) for all in-patient work.

According to the definition provided by the United States Institute of Medicine, an electronic medical record is a record maintained on an electronic system specifically designed for information collection, storage and manipulation, that provides support to users by offering secure and complete medical information on patient care, as well as health alerts and

reminders, while at the same time offering support for medical decision-making.

It is the patient that benefits most from this technological system, explains González. “Having all of the medical information integrated means that the health team's work is more secure, and that its decisions are better. The result is improved health outcomes and decisions, whether diagnostic, therapeutic or regarding the question of whether to admit a patient or continue outpatient care.”

EMR assist in making medical decisions involving matters such as allergic reactions to medications. With EMR, each member of the health team can access all of the medical information on each patient examined throughout the network in the past 12 years. This prevents duplicative tests and helps identify children who are not following the prescribed vaccination schedule, among many other benefits.

EMR also ensure that patients receive ongoing care, thus saving the hospital from having to deal with illnesses that have progressed to the acute stage. “I think that in the areas of prevention and promotion, these systems provide huge health benefits to the patients. Medical outcomes are also enhanced by the opportunity for collaborative care provided by having knowledge databases, available to the physician, that are adapted to the patient's situation,” says the Director of Medical Informatics.

Dr. González emphasizes that although it is costly to redesign the information system using information and communications technologies with proper standards for security and interoperability, and although managing the change is complex, the benefits –such as preventing a cerebral vascular event in a patient being treated for hypertension, or optimising resources and inputs– are clearly greater than the cost involved.

High-quality EMR require specially trained human resources. Hospital Italiano created a medical residency programme that trains specialists in medical informatics. This discipline makes it possible to apply tools and methods from different health fields, thus optimizing use of the information. The hospital's programme also involves multidisciplinary work with systems engineers, programmers, nurses, technical members of health teams, assisting physicians, epidemiologists and even researchers, to help in defining the health system's information needs.

Innovative health information system is implemented in Metropolitan West Health Service



In 2006, the Metropolitan West Health Service in Santiago, Chile, made a strategic decision to implement a health information system for integrated handling of clinical care, which is at the heart of hospital management. This was the origin of “Más Salud Occidente”, a user-centred health information system that employs electronic medical records containing patients’ medical histories with records of visits, results of laboratory and imaging tests, drug prescriptions, etc. The information can be accessed from any facility in the health network, thus ensuring continuity of care and providing patients with enhanced security and quality of care.

The sheer complexity of the system makes this a ground-breaking project for Chile’s public health system. It involves the entire network of 15 municipalities covered by the Metropolitan West Health Service –the country’s second largest, serving 1.2 million inhabitants and encompassing seven hospitals, a health referral centre and a diagnosis and treatment facility. The project will also gradually incorporate the area’s primary care systems, a network that includes 32 health centres, 22 major primary care facilities, 23 clinics and 12 community health centres. In addition, it is unique in that it provides a comprehensive solution covering all clinical and administrative processes.

Más Salud Occidente includes a set of solutions organized around the electronic medical record, thus supporting the health network’s entire range of clinical and administrative processes. The information system is built on four pillars: managing the patients in the network, managing the available resources, ensuring the quality and timeliness of service, and providing management with necessary information. The system also includes an ERP (enterprise resource planning) application to address the areas of supply, storage, receipts, billing and collections, and hospital maintenance.

The system benefits patients by providing rapid access to accurate information from any facility in the network. This ensures continuity across the entire medical care process, and incorporates information from different health centres, including primary and secondary facilities, as well as hospitals.

The system also helps optimize resource management, using modules for handling many different aspects of the hospital’s functioning, including: operating rooms, centralized management of beds, waiting lists, pharmacy, emergency room services, ambulatory care, hospital admissions and ERP.

Another major advance associated with Más Salud Occidente is its business intelligence tool, which is designed to improve the day-to-day work of all managers, heads of services and unit heads, by providing them an online means of checking data, cross-referencing information and conducting analyses. This tool makes it possible for managers to use the information stored on the system to monitor care, make timely decisions and efficiently manage available resources.

The system operates on a high-availability web platform, with an external data centre. It incorporates standards for interoperability between HL7, XML and web service systems, driven by a unifying InterSystems Ensemble. For data networks, it uses WAN with VPN/MPLS technology provided by the Ministry of Health; at the user level it incorporates PC and Thin Client Technology.

The system’s interoperability makes it possible for different systems to exchange processes or data automatically, giving each complete access to the available information. The Más Salud Occidente project requires interoperability with other applications, both internal and external. The systems of the National Health Fund (FONASA), for example, must be consulted in order to obtain patient information, while the primary care system must be referenced for the purpose of obtaining records of services provided.

The system’s interoperability provides an integrative benefit, employing messaging, as well as standards such as HL7 (specific health standards) and XML, which have the added benefit of ensuring technological neutrality. One of the most important features of the computer application is the layer of software entirely devoted to this task –the InterSystems Ensemble, which serves to integrate all of the data.

High availability refers to both the design protocol of the system and the associated implementation. The result is that a nearly absolute level of operational continuity is ensured –99.99% in the case of Más Salud– during a specified period of measurement.

News briefs

FluTrends, the Google tool for monitoring flu

Since 2008, Google has had a site that registers locations throughout the world where flu cases occur and monitors their progression and development. Data for the region include information on Argentina, Brazil, Chile, Mexico, Paraguay, Peru and Uruguay. Flu trends on Google are based on global Google search data, which are used to make approximate calculations of current flu activity in the world. The data are then compared with country data. For countries that do not have relevant data, the service is considered experimental (www.google.org/fluTrends).

Social media as a source of support for chronically ill patients

Patients suffering from chronic diseases have found a new source of support on the Internet: social media, where they can be in contact with others suffering from the same illness. A study conducted by Queen Mary University, in London, indicated that Facebook has 300,000 such individuals, across 757 groups that are involved in providing support, help and fund-raising associated with combating chronic diseases.

Latest publications on ICT



Avances en el acceso y el uso de las Tecnologías de la Información y la Comunicación en América Latina y el Caribe 2008 – 2010

Socinfo, ECLAC. March 2010. 68 pp.

This document details the advances and limitations of the region's countries in various fields, describing progress towards reaching the 2015-goal commitments undertaken during the World Summit on the Information Society.



ICT in the health sector in Latin America

Fundación Telefónica, 2008. 372 pp.

This report describes the impact of ICT on public health in Latin America. It presents a view of health challenges in some of the countries, and points to different technologies, experiences and initiatives that will help to improve services and health among their populations.



Improving Health Sector Efficiency. The role of information and communication technologies

OECD Health Policies Studies, OECD. 2010. 156 pp.

The analysis is based on specific lessons learned from case studies in six OECD countries that reported the extent of their success in deploying ICT solutions.



Seguridad de la información en entornos sanitarios

Sociedad Española de Informática de la Salud. 2008. 168 pp.

Designed for health professionals, this report covers concepts and terminology relating to logical security, as well as issues of expanding awareness and knowledge in this area. It also discusses questions related to providing training for and increasing the capacity to deal with related projects.



Telemedicine for the benefit of patients, healthcare systems and society

Commission of the European Communities, Brussels, Belgium. 2008. 15 pp.

This document explains the meaning, and gives examples, of telemedicine. It also discusses what is needed to make telemedicine a reality, and specifies three major levels of action for the coming years.



A healthy approach - Technology for personalised, preventative healthcare

European Commission, Information, Society and Media. June 2009. 24 pp.

This report shows how ICT are revolutionizing health care in Europe and increasing patients' decision-making power and control, while enhancing medical practitioners' capacity for diagnosis and decision-making.